# EXHAUST GAS PURIFYING SYSTEM FOR INTERNAL COMBUSTION ENGINE

## BACKGROUND OF THE INVENTION

[0001] The present invention relates to an exhaust gas purifying system for an internal combustion engine, composed of a NOx occlusion reduction type catalyst which reduces NOx (nitrogen oxides) in the exhaust gas of the internal combustion engine. To be more concrete, the invention relates to the technique for preventing HC, CO from being exhausted into the atmospheric air during rich-condition control for restoring the catalytic function of the NOx occlusion reduction type catalyst.

[0002] Various kinds of researches and proposals have been made concerning an NOx catalyst for reducing and purifying NOx in the exhaust gas of the internal combustion engines such as diesel engines and a part of gasoline engines, and various combustion systems.

[0003] One of them is the exhaust gas purifying system 1X where a NOx occlusion reduction type catalyst 31X is arranged in the exhaust gas passage 30 of the internal combustion engine 10 as shown in Fig.4. This exhaust gas purifying system 1X makes the NOx occlusion reduction type catalyst 31X absorb NOx when an air/fuel ratio of the inflow exhaust gas is lean. The regenerating operation is performed, when the NOx occlusion ability is almost saturated. In this regenerating operation, rich control for regenerating the NOx occlusion ability is performed to decrease the oxygen concentration of the inflow exhaust gas by making an air/fuel ratio of the exhaust gas to the theoretical air/fuel ratio or rich. The occluded NOx is discharged in the process. This discharged NOx is reduced by the catalytic function of an attached noble metal catalyst.

[0004] As shown in Fig. 5 to 7, this NOx occlusion reduction type catalyst,